DEVICE AND METHOD FOR ADJUSTING A LID OF A MOTOR VEHICLE BODY

BACKGROUND AND SUMMARY OF THE INVENTION

[0001] This invention relates to a device and a method for adjusting a lid of a motor vehicle body.

[0002] German document 42 26 437 A1 discloses a device and a method having a base which is arranged on the lid of a motor vehicle body and to which a slide with a lateral supporting element is displaceably fastened. When adjusting a gap size of the lid in relation to a body frame, the supporting element is brought - by displacement of the slide in the transverse direction of the vehicle - into a position supported on an opposing surface of the frame, and then the slide is fixed to the base. For the damping support of the lid on the body, an elastic buffer is arranged on the supporting element. The fact that the buffer which is supported on the frame of the body may cause noise to be produced during driving is to be regarded here as a disadvantage.

[0003] This invention is based on the object of providing a device and a method of the type mentioned at the beginning with a means of adjustment, in which irritating noises do not arise during driving and paint damage cannot occur during the closing operation.

[0004] This object is achieved according to the invention, and advantageous refinements of the invention are claimed.

[0005] In a device proposed according to the invention, and in a method for adjusting the lid in relation to the frame, an axially acting buffer is provided for damping support of the lid and is initially used to adjust the lid transversely with respect to the plane of the frame. After sliding displacement of the released slide into a starting position and placing an associated spacer gauge against the particular opposing surface of the frame, the slide is slidingly displaced into a desired position in which, during careful closing of the lid, the supporting element is supported on the spacer gauge. This achieves a securable desired position of the supporting element, in which, when the lid is closed and adjusted, the supporting element is at a lateral distance from the opposing surface of the body. The distance between the supporting element and the opposing surface of the body, which corresponds to the width of the spacer gauge, ensures a noise-free arrangement of the lid of the body during driving.

[0006] During an incorrect closing operation, for example due to the introduction of a lateral force, the position of the lateral supporting element makes it possible to intercept the rear lid and to bring it into a desired position before the rear lid can collide with the adjacent frame.

[0007] Further advantages, features and details of the invention emerge from the description below of a preferred exemplary embodiment and by reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Figure 1 shows a partial schematic sectional view along a plane running in the transverse direction of the vehicle and vertically through a rear lid, which is arranged on a motor vehicle body and the position of which can be adjusted in relation to a frame of the body by means of a device;

[0009] Figure 2 shows an enlarged sectional view of the partially illustrated rear lid and frame according to Figure 1, with the adjustment of the desired position of the device being clarified;

[0010] Figures 3a-3d show the device for adjusting the lid in relation to a motor vehicle body according to Figures 1 and 2 in plan view, in bottom view, in side view and in perspective view; and

[0011] Figures 4a-4c each show a sectional view through the device along lines IVa-IVa, IVb-IVb, and IVc-IVc, respectively, in Figure 3a.

DETAILED DESCRIPTION OF THE INVENTION

[0012] In Figure 1, a motor vehicle body having a rear wing 10 and a rear lid 12 mounted pivotably on the body can be partially seen in a schematic sectional view along a plane running in the transverse direction of the vehicle and vertically. The body comprises a frame 14 which surrounds the rear lid 12 and in which a panel 16, which has a rain channel 18 and is made of metal sheet, plastic or the like, is fastened in an enclosed manner. In the present exemplary

embodiment, the rear lid 12 is made of a two-shell metal sheet on which a device for adjusting the lid 12 in relation to the body is arranged.

[0013] The construction of the device becomes clear from looking at Figures 3a to 3d, in which the device is shown in plan view, in bottom view, in side view and in perspective view, and at Figures 4a to 4c, which each respectively show a section through the device along the lines IVa-IVa, IVb-IVb, and IVc-IVc in Figure 3a. In the exemplary embodiment shown, the device is preassembled on the lid 12 on opposite sides running in the longitudinal direction of the vehicle. The device comprises a base 20 which is arranged on the lid 12 via two screws 21 and to which a slide 22 with a lateral supporting element 24 is displaceably fastened. For the damping support of the lid 12, an axially acting buffer 26 which protrudes from the underside of the lid 12 approximately at right angles to the base 20 is provided. The buffer 26 comprises a rubber-elastic buffer head 30 which is supported by a spring 28, is screwed at one end into a thread 35 fixed on the lid and is designed in a manner such that it can be adjusted axially by rotation. Matching the buffer head 30, a receiving depression 32 is introduced into the panel 16 of the frame 14. In addition, a sealing lip 33 (Figure 3b) is provided around the buffer 26 and prevents water from penetrating the trunk.

[0014] In the exemplary embodiment shown here, the slide 22 is of U-shaped design with two limbs 34, 36 which are fixed on the base 20 via the respectively assigned screw fastening 21. In order to realize the sliding displacement (explained in more detail below) of the slide 22 in relation to the

base 20, the openings 38 penetrating the limbs 34, 36 are designed as elongated holes. When the screw connections 21 are released, the slide 22 can thereby be displaced in the width direction of the vehicle. In order to enable a parallel and defined sliding displacement of the slide 22 in relation to the base 20, bushings 37 (Figure 4c), which protrude with an end section into the elongated holes 38, are provided on the base 20. The bushings 37 surround the screws 21 and are matched to the width of the elongated holes 38. A respective toothing 40 (Figure 4b) is provided between the bearing surfaces of the limbs 34, 36 and the associated bearing surfaces of the base. The toothing 40 may also be omitted. This toothing enables the slide 22 and the base 20 to be fixed in a secure position on the rear lid 12. The two limbs 34, 36 are connected to each other via the cross-sectional U-shaped supporting element 24 running perpendicularly to them, with the slide 22 being of integral design here. The supporting element 24 is made of a low-damping material and, on the broad side of a limb 42 of the U-shaped profile, comprises a supporting surface 44 via which the supporting element 24 is supported (in a manner explained in more detail below) on an opposing surface of a spacer gauge 46 during the adjustment of the gap size of the lid 12. In this case, the supporting surface 44 of the supporting element 24 is inclined approximately parallel to the opposing surface of the spacer gauge 46 or to the opposing surface 50 of the panel. The buffer 26 is arranged in a central region of the slide 22.

[0015] With reference to Figure 2, which shows an enlarged sectional view of the partially illustrated rear lid 12 and of the frame 14 according to Figure 1,

the adjustment of the desired position of the device is clarified. For this purpose, the buffer 26 is axially adjusted transversely with respect to the plane of the frame 14 in such a manner, by the device preassembled on the lid 12, that the lid 12 is preferably arranged at a common height with the wing end regions 10 which are adjacent to the frame 14. Then the slide 22, which is preassembled on the lid 12, and the base 20 - if this has not already happened during preassembly - have to be slightly released by the screws 21, so that the slide 22 can be displaced in relation to the base 20. The released slide 22 is slidingly displaced outward until it has reached a starting position. In the starting position, the slide 22 uses the supporting element 24 here to overlap the clear opening of the frame 14. It is clear that the lid 12 has to be opened in order to transfer the slide 22 into the starting position. When the lid is open, the spacer gauge 46 is placed onto an associated opposing surface 50 of the panel 16 of the frame 14. It is apparent that the spacer gauge 46 can be applied before, in parallel with or after other working steps on the device, in particular the transferring of the slide 22 into the starting position. The lid 12 can then be brought into its closed position by careful movement. This firstly sets, between the frame 14 and the lid 12, a gap size which corresponds approximately to the width of the spacer gauge 46. At the same time, when the lid 12 is closed, the slide 22 is slidingly displaced into a desired position in the direction of the center of the lid 12 by the broad side 44 of the supporting element 24 striking against the spacer gauge 46. In other words, the distance of the broad side 44 of the supporting element 24 from the associated opposing surface 50 of the cover 16 corresponds approximately to the width of the spacer gauge 46. For easy sliding displacement, the bushings 37

(already explained) are provided between the slide 22 and base 20. The desired position set is temporarily secured by the toothing between the base 20 and the slide 22.

[0016] The lid 12 can then be opened and the spacer gauge 46 removed. The desired position, which has been temporarily secured by the toothing or clamping action between the base 20 and the side 22, is definitively secured by tightening the two screws 21, and the base 20 and the slide 22 are fixed on the lid.

[0017] With the lid 12 closed and adjusted, the lateral distance between the broad side 44 of the supporting element 24 and the associated opposing surface 50 of the cover 16 remains, as a result of which irritating frictional noises or the like are effectively avoided when driving.

[0018] Instead of in a rear lid 12, the device may also be arranged in a different lid or flap on the body of a motor vehicle.